



COLORADO SPRINGS,
COLORADO

JULY 1990

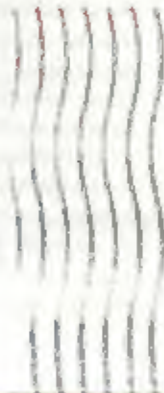
SPECIAL EDITION!!
LIMON TORNADO

PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.
P.O. Box 16521
Colorado Springs, CO 80935



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Ø BEAT



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* denotes the first year of a two-year term.

ZERO BEAT is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., P.O. Box 16521, Colorado Springs, Colorado 80935. Cost is 50¢ per month for non-members or a \$6.00 per year subscription. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at 7:00 p.m. All amateurs and interested parties are invited to attend.

EDITOR: Ron Deutsch NK0P 4305 Ridgeland Drive Colorado Springs, Co. 80918 (719) 593-8352 or 145.01 (Packet)

MESSAGE FROM THE PRESIDENT

There has been a lot of amateur radio activity this past month. The tornadoes that swept through the town of Limon, CO, highlighted what is best about our hobby; a pool of trained radio operators with equipment and skills that can be brought into play within minutes of a disaster. When all communications to Limon were knocked out, hams provided vital communications links so that relief efforts as well as health and welfare message traffic could get underway.

There were a lot of mixed feelings concerning the media coverage that amateur radio got during and after the Limon disaster. To a great extent the amateur radio community should be satisfied knowing that their efforts made a difference. With the El Paso County antenna limitation proposals again on the front burner it would have certainly been nice to see the role of amateur radio publicized more prominently.

Moving on to the antenna proposals, I urge you to attend whenever the county decides to bring them up for public discussion. In the mean time it would not hurt to call for your own copy of the proposals thereby sending a message that we as a group are interested. Take the time to call or write the county commissioners and the Gazette Telegraph (although I must say that the GT has for three weeks now refused to print my comments on the antenna proposals). Perhaps if they received several calls on the same subject it would become a more newsworthy topic.

At the board meeting this month we decided to spend some club money in two instances and defer on a third issue until we hear from members of the club. As we go to press the club is putting an Astron 12 amp power supply and an IC-28A 2 meter rig at the weather bureau for use in the event of further bad weather. An IC-28A was also purchased so that our numerous public service events would not result in periods of time when there was no radio at the weather bureau. We hope to get some pictures at a "formal" ribbon cutting ceremony for publication in next month's newsletter and perhaps QST or the Gazette Telegraph. We also decided to make a contribution to the Elk's Lodge scholarship fund. This donation and our sincere thanks go out to the Elk's Lodge with the hope that we can continue to meet there in the future. The club trailer is an issue that must be discussed by the entire membership. Put simply, we must

either make a commitment to the trailer to spend the money and effort needed to make it a useful piece of club property or get rid of it. I hope to see some lively discussion at the next club meeting. Don't forget, the program includes video coverage of the disaster in Limon. Hope to see you there.

73eRickWB7THT

As promised here are up to date element sets for amateur satellites.

NAME: MIR, ID: 16609, Epoch: 90177.53915379, Incl: 51.6130, RAAN: 283.4912, Ecc: .0010919, ARG: 78.7205, Me An: 281.4898, M Mot: 15.62067314, Drag: .00017275, Orbit: 249569.

NAME: OSCAR 13, ID: 19216, Epoch: 90174.93372292, Incl: 50.983, RAAN: 149.0016, Ecc: .0976006, ARG: 229.8967, ME AN: 44.7257, M MOT: 2.09704096, DRAG: .000099999, ORBIT: 13540.

NAME: OSCAR 14, ID: 20437, EPOCH: 90177.84122971, INCL: 98.7004, RAAN: 253.9219, ECCE: .0012435, ARG: 125.6731, ME AN: 294.5598, M MOT: 14.28643067, DRAG: .000016952, ORBIT: 22244.

NAME: OSCAR 15, ID: 20438, EPOCH: 90177.44649589, INCL: 98.7009, RAAN: 253.5115, ECCE: .0011063, ARG: 123.1959, ME AN: 237.0287, M MOT: 14.28385377, DRAG: .00012451, ORBIT: 22185.

NAME: OSCAR 16, ID: 20439, EPOCH: 90178.04042448, INCL: 98.7042, RAAN: 254.2248, ECCE: .0012264, ARG: 122.1816, ME AN: 238.0558, M MOT: 14.28749267, DRAG: .00011950, ORBIT: 22277.

NAME: OSCAR 17, ID: 20440, EPOCH: 90178.09618754, INCL: 98.7039, RAAN: 254.2299, ECCE: .0012589, ARG: 122.7441, ME AN: 237.4956, M MOT: 14.28795529, DRAG: .00012941, ORBIT: 22278.

NAME: OSCAR 18, ID: 20441, EPOCH: 90177.95461983, INCL: 98.7037, RAAN: 254.1689, ECCE: .0013181, ARG: 124.4218, ME AN: 235.8210, M MOT: 14.28891809, DRAG: .00011417, ORBIT: 22261.

NAME: OSCAR 19, ID: 20442, EPOCH: 90177.52705175, INCL: 98.7032, RAAN: 253.7581, ECCE: .0013565, ARG: 125.3400, ME AN: 234.9052, M MOT: 14.28960855, DRAG: .00012322, ORBIT: 22208.

73eRick, WB7THT

The Aftermath of The Limon Tornado

by David Banks NØION

My son Chris recently graduated from the D.A.R.E. (Drug Abuse Resistance Education) program at his school. One of the "perks" was D.A.R.E. night at the Sky Sox game on June 6 when students wearing their D.A.R.E. tee-shirts could get in free of charge. Despite my dislike for baseball, I took him along.

It started out with quite pleasant weather but, as the evening wore on, a storm cell to the East Southeast of the stadium was building rapidly. The lower level appeared to be moving roughly Northeastwardly, but the top was moving over towards us. I knew this was a big storm, but I got some idea of just how high when a commercial aircraft at about normal cruising altitude flew past the bottom part of the storm!

I persuaded Chris that we should leave early because we would probably end up getting soaked on the way back to the car. So we went home and relaxed for the rest of the evening because I was tired from a number of things going on in recent days.

Then I saw the crawl on the bottom of the TV screen, put on my scanner next to my chair, and heard the story about what was going on in Limon. Some hams were already on their way out to Limon to provide communications relief. The State Patrol had lost all communications with their station in Limon. The Disaster center, the Red Cross, and the Salvation Army were all requesting information. The National Weather Service had lost contact with its weather radar station just outside the town of Limon. And the only communications in town was amateur radio. At that point, I decided to get a good night's sleep and then get out there the following morning to do what I could to help.

When I got to Limon the following morning, I was escorted by a State Patrol car through the rubble to the State Patrol headquarters where our command center was set up. The radar tower which provided phone communications to and from Limon, the horn at the top looked almost serviceable. But the waveguide feed from the bottom to the top was all twisted and bent. For those who are not familiar with waveguide, it is a precision-made typically rectangular brass tubing through which a microwave signal is transmitted to and from an antenna. The manufacturing tolerances of 1 x 1/2 inch waveguide is typically better than one thousandth of an inch. Later in the day I saw a guy up on the tower with a hammer trying to straighten it out just enough to work, and amazingly he succeeded! They did have to replace it the following day, but he did just well enough to get some circuits back up, though the reliability of the connection was not guaranteed!

The second tower housed all other antennas for the state and local police and all emergency services. I don't think there was one undamaged antenna left. But again, some straightening out eventually gave at least partial efficiency, enough to restore some degree of communications.

I had heard on my way there that, although Mallory WØIKY had been at Limon Radar the previous evening, there was still no communications between there and the National Weather Service in Denver. So I set out there with Tim WØOTUB who had just got directions to the radar site. When we got there, everything was in fine shape, except for the phone lines which is how they normally transmit the radar image to the rest of the state. Tim had a mobile rig not yet installed in this car, so we took it inside, ran a cable through the window to his car battery, put his mag mount antenna on the hood of his car, again fed through the window, and, using WØION as the station call, we managed to establish a solid link into the 146.37/97 machine which was being used for all coordination.

That repeater was the only one that was usable from Limon. The Hugo repeater had been knocked out by the storm. Denver ones were not reachable, neither were the lower elevation ones in the Colorado Springs area. The height of that repeater's antenna was the key to the sole link from Limon to the rest of the world (and people dare to say amateurs don't need high towers...!).

Fortunately, that day was a quiet one from a weather standpoint, but it was obvious that both the Weather Service people and the public at large were pleased to know that we had communications established between the radar site and the NWS forecasters in Denver.

We heard from the Limon Radar folks about what had transpired there the night before. Kathy Butler, who heads up the NWS operation there, said they were keeping an eye on the storm, but were having some difficulty as it got closer because of ground clutter, unwanted radar reflections from nearby objects on the ground. As it was approaching, at one point she went outside to take a look when suddenly there was a loud THUD alongside her. She looked down and saw a single 2 inch diameter hailstone. She thought "How can I report a single piece of hail?" But as she carried it inside to show the others in there, they heard more thuds as the hail really started to fall. Before it was over, they would have softball sized hail falling there (they still had some in their freezer when we were there -- a sight to see!).

Soon they were able to make out the outline of the Tornado which passed about a mile North of them, and the sirens were activated. The southwestern part of the town had about a 10 minute warning, so it would be close to 15 minutes for the northeastern part of town. And it was enough, enough that no lives were lost though there were a few injuries, a couple serious.

The devastation was enormous. Loss to property has been estimated at around \$13 million. And there were lots of stories going around about how people escaped because of the warning. But not a single life was lost.

Amateur Radio may not have saved lives in Limon, but it did help out in the aftermath by providing communications for all the relief efforts. And it helped reassure everyone that the next day was going to be a safe one from the standpoint of weather.

The National Weather Service appreciated our efforts enough to send me this letter of appreciation. But Kathy also included this cartoon which goes to show that, even in the shadow of such devastation, the people of Limon still have a sense of humor.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Meteorological Observatory
R R 2 Box 138
Limon, Co 80828

June 26, 1990

MEMORANDUM FOR: David Banks
NØION
FROM: Kathleen Butler
OIC, WSMO, Limon, Co.
SUBJECT: Letter of Appreciation

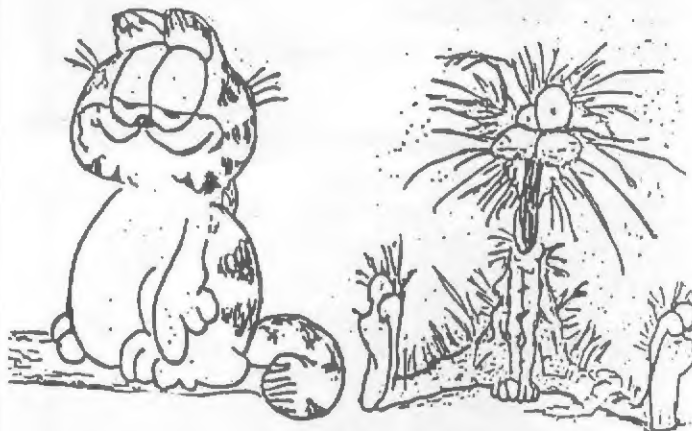
I would like to convey my sincere appreciation for your efforts regarding the Limon tornado destruction of June 6, 1990.

Your knowledge of and experience with amateur radio operations helped maintain the high state of operational readiness within the National Weather Service Meteorological Observatory in Limon. I know that it took long hard hours of volunteer work and considerable personal sacrifice to ensure the success of Limon Radar getting their weather information and briefings to the proper sources during their complete lack of communication lines.

I applaud your accomplishments and congratulate you on a job well done. Thank you.



LIMON TORNADO
June 6, 1990
Before After





1934 Official

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FROM NET CONTROL, LIMON, CO.....

HARV, WB6YXD

When a tornado ripped through Limon a couple of weeks ago, I tuned into the 97 machine to see what was going on and copied Mike (KOTER) directing the "net" until well after midnight. Like thousands of other people the next day, I read the morning paper and began to realize the extent of the destruction that actually occurred. It seemed almost impossible to me that with such a vast expanse of flat land east of our QTH, that a "twister" could touch down at the exact spot where a town was.

I continued to copy the mail through out Thursday listening to fellow "HAMS" (mostly people I know) do what they do best in the time of disasters. It was no surprise to hear them conducting health and welfare checks, coordinating communications for the Red Cross and sending information for the Limon Radar Station.

Then came Friday a.m.. I was on my way to Denver and somewhere around Larkspur I heard Mike again. This time he was talking about hooking up his trailer and heading eastward and before I knew it I was calling him to see if he needed any help. We established a meeting point and then started out for a long two days. Besides that, providing emergency communications seemed a lot more interesting then reviewing year-to-date budgets which is what I was faced with had I made it to work.

We arrived at our destination (Limon Highway Patrol parking lot) around 10 a.m. and immediately started leveling the trailer and with help from Frank (NOIRM), Chris (NXOK), and Larry (NOAMP), we also erected HF and VHF antennas. As soon as we were operational, Dave (KA3HBK) from Boulder was happy to turn over "net control" as he had been going non-stop for well over 18 hours. Shortly after Jim (WAOTAV) and Paul (NOJAA), looking more dead then alive were relieved after hours of checking on local residents and they too headed for a bed.

Our little "comm station" was a sight to behold. Nestled between downed power lines on one side and a hay bailer on the other we operated two, 2 meter rigs. One on simplex for local traffic, the other linked into 97 and dedicated to handling messages for Pikes Peak and Mile High Red Cross Chapters as well as the National Weather Service. Hour after hour I sat across from Mike (KOTER), as he passed H&W messages in both directions via Carl (KAQJEA) and Morey (WAQYNP).

We finally settled into a routine and when we needed help the most, people just seemed to appear. First, Glen (WA0ULE) volunteered to spend the duration out at the radar station and Dave (KA3HBK) set up his rig at the Colorado Springs weather station where they would provide the only communications between the two facilities. George (W0DUM) showed up and did more then his fair share during the remainder of the day by delivering messages and securing responses.

The next day, Saturday June 9th, we had a number of people arrive and unselfishly give their time and efforts to help relieve some of the pain and uncertainty being experienced by people who were accustomed to taking in strangers that have been stranded during snow storms while passing through the Limon area. Rosie (WA0MNL) and her OM, Russ (KBOFNM), were among the first to arrive and were put on the H&W detail, as were Mel (W3TMR) and his XYL Sara Lee (NO1ZQ). By-the-way, Mel will be conducting the club program this month by showing a video tape that he and Sara Lee shot of the Limon aftermath.

Matt (KC4KGS) and his bride (currently studying for her Ticket) were also there and got to know the town pretty well. To round out Saturdays work crew, John (NOKIC), and his better half Barbara, drove out as did Doug (WBOMPH) with his son, and David (NOION), followed soon after.

Throughout the day we continued to receive support from Jake (NOCYR), Charlie (NOIER) and so many others as they ran errands, contacted wives and just listened and jumped in when needed. I felt proud to be associated with so many wonderful people who actually care. I also apologize to anyone I left out of this article. that should have been included.

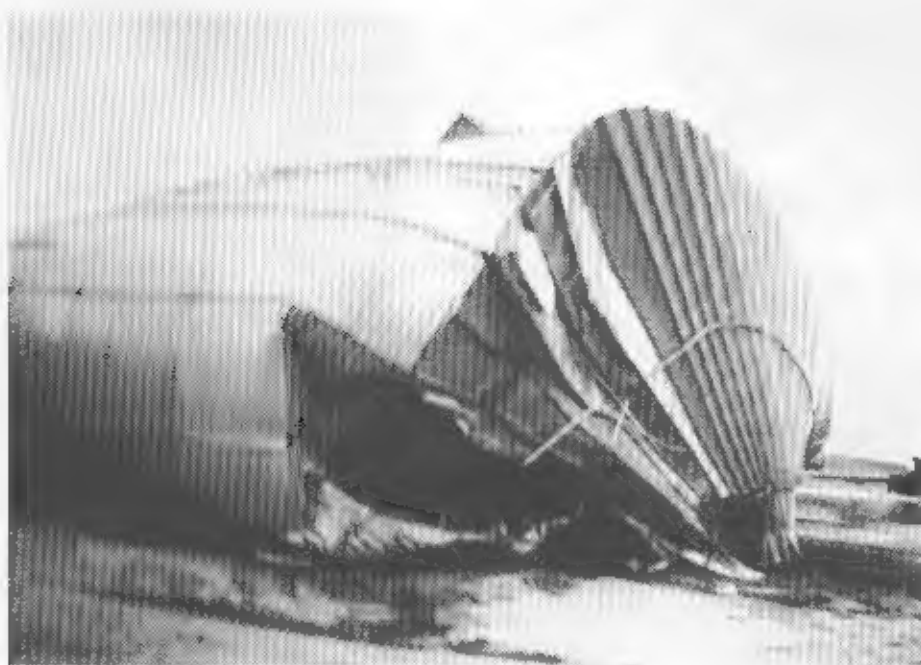
Some lasting impressions...

The only time I've seen destruction on a scale like this was in a combat zone where buildings took a direct hit or maybe it was the time my XYL and I worked the aftermath of hurricane Inez that killed 2000 people in the Dominican Republic and Haiti while serving as Peace Corps Volunteers in 1968.

I'll always hold fond memories of people helping people. Most of all I'll remember our amature radio community and a guy I shared a trailer with for two days. I'll never forget the spirit of those that lost so much. They are working hard cleaning up and rebuilding their lives, and what a job they have ahead of them.

I would be remiss if I didn't tell you of the respect I gained for the Salvation Army. They were short staffed, over worked and tired. But never-the-less, they cranked out meals almost 24 hours a day and would continue to do so for several weeks.

Jake, you take it... we have another cell moving in and are getting clobbered by wind and rain. This is WB6YXD, Limon Net Control, Clear.





GENERAL MEETING

JUNE 13, 1990

Meeting called to order by President Rick, WB7THT at 1900 by introduction of each member and guest.

Note: The radio Heathkit was donated for Weather Service by LEE, W0BLV, and repaired by MIKE, K0TER.

Minutes were approved as printed in OBEAT.

TREASURER REPORT

PREVIOUS \$1947.61

INCOME \$2493.48

EXPENSES \$954.64

BAL \$3486.45

COMMITTEE REPORTS:

RPIJEFF N0JLH 591-6438 NIL

EDUCATION BUD N0DDF 475-0573 NIL

D&B SCHOOL BUD N0AA 689-2963 Nothing new.

PUBLICSERVICE MIKE K0TER 636-1290

Thanks to all who helped out at Limon.

Bike-athon July 7&8.

Colorado State games July 27,28,29.

Rocket Launch Aug 17,18,19.

Pikes Peak Hill Climb July 29.

Anyone interested in helping contact Mike for any those events.

CCARC OAK K0ROL 570-7782, Next meeting in September in Denver.

Hill Climbs Mike W9MHL 488-2440 Thanks those for helping at Teller county hill climb; need volunteers for Pikes Peak Hill climb July 29.

V.E. TESTING MAX KD0EL 488-9289 by Pete N0LA next testing Sept. 8th and then 2nd Sat. in December at Chapman College, Flintridge and Academy.

OBEAT RON NK0P 593-8352 Need articles on Limon for next issue of OBEAT.

TOM MERIDETH gave a pep talk on the state games. Those who participate will get a t-shirt and attend a concert at Falcon Stadium.

Rick WB7THT reported that swapfest was a success Icom was happy. Next year need a whole new crew to head it up. He and Ron NK0P will not do it next year, so start planning now for it, never to soon.

Mike K0TER reported the Heath kit radio was not working at the Weather Station so would take club up on using the clubs IC-28. Club will buy a power supply for it.

Transmitter hunt Saturday June 16th at East Library.

Next board meeting at Lauren KX00 QTH Monday June 18 at 1900.

Club decided to have an auction at the club picnic August 5th at Academy picnic ground 3.

RAFFLE:

K0GHJ Handbook

KB0EPN Andy, subscription to World Radio.

WB0DUM George Cave of the Wind ticket.

WB6YXD Harv gift certificate for Gateway Electronics

N8CLX George Printer stand

WD0K George ICOM poster

PROGRAM was a very nice film by Mike Guyote on simulated shuttle landings in a T38 and a drag race between a F4 and F16 all taken at Edwards Air Force Test Center.

Meeting adjourned at 21:30.

submitted by AL N0CMW/SEC PPRAA

BOARD MEETING

JUNE 18, 1990. Meeting called to order by Rick WB7THT at 1900 at QTH of Lauren KX00.

Present were:

AL N0CMW, RON NK0P, DAVE N0ION, ROSIE WB0MNL, RUS KB0FNM, FLOYD KB5FCN, LAUREN KX00, RICK WB7THT and LARRY N0AMP

Picnic August 5th was discussed.

A lengthy discussion was held on the condition of club trailer. It needs a spot in town for storage for accessibility for use in emergency. It also needs repair. The board decided to get rid of the trailer unless the club members have known use for it, and find a club trailer committee and chairman to fix it up. Basically it boils down to the club trailer has been used about 3 times in last two years. Everyone keeps modifying the electrical hookup on the trailer and not modifying theirs to meet it. It will have one plug set up which will be published in Obeat and those wishing to tow it will have to make up an adapter to fit his vehicle and club trailer.

The board voted to donate \$100.00 to the Elks scholarship fund and to add the manager to the Obeat mailing list.

The board decided to buy a radio for the weather station use and a power supply for it, as it was determined that the one the club now has might be needed by them and a public service event at same time. The radio will belong to the club and just be on loan to Weather Service and not their property.

NOTE: Club trailer will be topic of discussion next meeting. The program will be videos of Limon by MEL AND HARV.

Next board meeting at QTH of AL N0CMW.

SUBMITTED BY AL N0CMW/SEC PPRAA.BK

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Check (X) bands/modes you can operate:

	160	80	40	30	20	18	15	12	10	6	2	220	440	
CW														
FM														
RTTY														
AMTOR														
SSB														
MOBILE														
PACKET														
FM HT														

Can your home station operate without commercial power? ☐ Yes ☐ No

If yes, what bands? _____

If yes, ☐ Generator ☐ Battery ☐ Solar ☐ Other _____

Do you have a mag mount antenna? ☐ Yes ☐ No

If yes, for what band(s)? _____

Are you a RACES member? ☐ Yes ☐ No

Are you interested in helping at routine public service events? ☐ Yes ☐ No

Do you have a telephone modem? ☐ Yes ☐ No

Do you have four-wheel drive transportation? ☐ Yes ☐ No

If yes, ☐ Truck ☐ Sport/utility ☐ Car

Have you taken a weather spotter's class? ☐ Yes ☐ No

If yes, where and when? _____

Other skills or interests you feel may be helpful? _____

**SEND TO: JOHN, NØKIC, 604 EAST FONTENERO
COLORADO SPRINGS, CO. 80907**

" LIMON APPRECIATES YOU—COME AND SEE US WHEN WE GET REBUILT"

This is a quote from a note we received from a dear lady in Limon, Colorado. Her home is a block from the devastated area and suffered some damage—she volunteered her services and was a great help in checking health and welfare traffic with us.

People helping people seemed to be the theme the day we were in Limon. (3rd day after the tornado) Workers were already clearing away rubble and debris. The devastation was unreal. And, there were the Ham operators doing all they could.

One of the local citizens of Limon asked me what the letters HAM meant, but before I could answer he said "Handing A Miracle, that's what it means to us"

"Ham operators, we thank you!"

W40MNL, Rosie

JULY PPRAA MEETING

The next meeting of the PPRAA will be Wednesday July 11th.

The subject will be "The Limon Tornado"

CARE AND SHARE

Don't forget to bring your food donation to the club meeting. All donations will be taken to the Care and Share Food Pantry.

CLUB PICNIC

The PPRAA will hold its annual picnic on August 5th at the USAF Academy picnic area. A mini-swap-fee/auction is planned along with great food and good company! The Pikee Peak FM group will be joining us again this year.

OEM PARTS

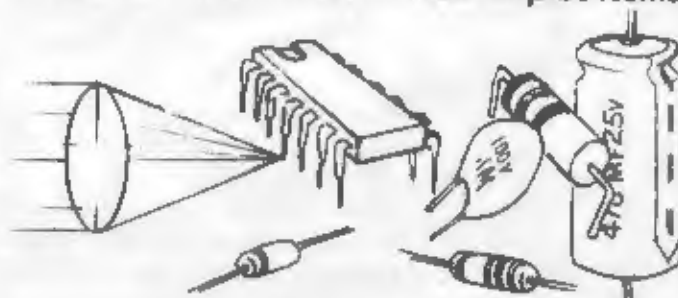
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AMATEUR RADIO PICNIC

- WHO:** All amateurs within simplex range and others from Pikes Peak Amateur Radio Club, PPFMA, Cheyenne MT. Repeater Group, and the Air Force Academy Radio Club.
- WHAT:** Are invited to join in and attend the 1990 Picnicfest.
- WHERE:** Picnic Ground Number 3, at the Air Force Academy. We'll talk you in on 52 or ask the guard at the gate for directions.
- WHEN:** August 3, 1990 from 12 noon until ???
- WHY:** Just because "HAMS" like to eat, chat, swap stories and look at used radio gear while saying HMMMMM!
- HOW:** The clubs will furnish the hamburgers, hot dogs, drinks, chips, charcoal, paper goods, plastic ware, and all the fixings. You bring all the rest; Potato salad, desert, etc.
- We will need a head count so please call Harv (WB6YXD) 481-4597 or Rosie (WA0MNL) 471-9965 and turn in your numbers.
- Also plan on a tailgate mini swap meet.

Membership Application PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

P.O. Box 16521
Colorado Springs, CO 80935

Date _____

Name _____

Address _____

City _____ State _____ Zip _____

Call _____ License Class _____

Are You An ARRL Member? ☐ Yes ☐ No

• Member Over 65 \$10.00

• Family Both Over 65 \$12.00

• Associate Member \$10.00

Telephone _____

• Full Member \$15.00

• Family Membership \$18.00

• Newsletter Only \$10.00

Additional Names _____ Call _____ Class _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)

PPRAA is not associated with the Pikes Peak FM Association.